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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/588,891	03/06/2007	Bryan E. Cole	M0025.0357/P357	3953

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EXAMINER	
TANINGCO, MARCUS H	
ART UNIT	PAPER NUMBER
2884	
MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,891	COLE ET AL.	
	Examiner	Art Unit	
	MARCUS H. TANINGCO	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,19-29 and 34-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17,19-29 and 34-63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/20/2010 has been entered.

Response to Arguments

Applicant's arguments filed 8/20/2010 have been fully considered but they are not persuasive. Applicant's main argument is that prior art fails to teach scanning means for moving either the probe array or the object so as to allow a scanning of the object. Note that Cielsa specifically teaches on page 35, scanning multiple regions of an object, said regions being accessed by fixing the y-position on the object and performing a line scan in the x-direction, which suggests scanning means. Modifying Ciesla with a scanning mechanism to perform said line scan would have been obvious to a skilled artisan as discussed below. Applicant also argues that prior art fails to teach at least two detectors to detect radiation reflected from an object. In response, Applicant is directed to pg. 32 of Ciesla wherein Ciesla discloses that the number of detectors depend upon the application and spatial resolution required. As such, when imaging an object which requires a spatial resolution obtained by providing at least two detectors, a skilled

artisan would have been motivated to provide said detectors in view of providing an image of the whole object.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-17, 19-29, and 34-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ciesla et al. (*Ciesla*, GB 2352512) in view of Arnone et al. (*Arnone*, US 2003/0178584).

With regards to claims 1 and 3, Ciesla discloses a radiation probe for imaging an object comprising: a probe array, said probe array comprising: at least one emitter for emitting radiation, a plurality of detectors (pg. 32) for detecting radiation, and means for directing radiation emitted by the at least one emitter to the object and for directing radiation reflected (Abstract) from the object to the plurality of detectors, wherein said probe array is configured to

perform a line scan of an object (in an x-direction across multiple regions, pg. 35), said line scan moving relative to said object such that emitted radiation is scanned across the object and reflected back to said plurality of detectors.

Although Ciesla fails to teach a specific scanning mechanism, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Ciesla with said mechanism in view of providing means to perform said line scan.

Ciesla fails to teach said emitter and detectors are photoconductive devices. Arnone teaches a THz imaging device comprising photoconductive emitter and detectors. It would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Ciesla with Arnone in order to provide deeper penetration depths.

Ciesla also fails to specify that the reflected radiation is reflected to at least two of the plurality of detectors. Cielsa does teach, however, that the number of detectors depend upon the application and spatial resolution required (pg. 32). As such, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Ciesla such that the reflected radiation is reflected to at least two of the plurality of detectors in order to image said object with the proper spatial resolution depending upon the application.

With regards to claim 2, Ciesla discloses said emitter comprises a frequency conversion member of the recited type (pg. 2).

With regards to claims 4 and 5, Ciesla discloses said at least one emitter is configured to emit pulses of radiation having a plurality of frequencies, at least one of said frequencies being in the range from 25 GHz to 100THz. (pg. 1, 3).

With regards to claim 6, Ciesla discloses all aspects of the claimed invention, but fails to teach means for raster scanning. Nevertheless, raster scanning was well known. An example is taught by Arnone [0141]. As such, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Ciesla with Arnone depending upon the needs of the application. Furthermore, all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

With regards to claim 7, Ciesla discloses said array comprises a single central emitter surrounded by the plurality of detectors (Fig. 11).

With regards to claim 8, Ciesla discloses said plurality of detectors are directed towards a point such that in use the object is located at this point (Fig. 13).

With regards to claim 9, Ciesla discloses that the central emitter directs the emitted radiation into a directed beam (Fig. 2).

With regards to claims 10-13, Ciesla fails to teach the recited number and configuration of emitter and detectors. However, it would have been obvious to one with ordinary skill in the art at the time the invention was made to provide an equal number of emitters and detectors, since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. Also, it would have been obvious to one having ordinary skill in the art at the time the invention was made to reconfigure the arrangement taught by Ciesla, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re* Japikse, 86 USPQ 70.

With regards to claims 14 and 15, Arnone teaches raster scanning, but fails to teach scanning by a linear translation of a stack nor by rotation about an axis through the stack. With regards to the specific type of scan, those skilled in the art appreciate that, absent some degree of criticality, the scanning technique would have been a matter of routine design choice that would have been within the skill of a person of ordinary skill in the art depending on the needs of the particular application in order to efficiently image the object of interest.

With regards to claims 16 and 17, Ciesla discloses said emitter and detectors are mounted within a self contained housing module (pg. 7). Furthermore, it has been held that the recitation that an element is "capable of" performing a function is no a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchinson*, 69 USPQ 138.

With regards to claim 19, Ciesla discloses said array further comprises a lens array to focus the irradiating radiation onto the at least one emitter and plurality of detectors (pg. 24).

With regards to claim 20, Ciesla discloses that the irradiating radiation is supplied by means of a number of optical fibres (pg. 4).

With regards to claim 21, Ciesla discloses a separate optical fibre supplies irradiating radiation to a single emitter/detector (Fig. 13).

With regards to claim 22, Ciesla discloses the recited lens array (pg. 4, 24)

With regards to claim 23, Ciesla discloses the array further comprises a THz transmitting array to couple in or out any THz radiation (pg. 24).

With regards to claim 24, Ciesla discloses a THZ transmitting array of the recited type (pg. 4).

With regards to claim 25, Ciesla discloses signal processing means for analyzing the radiation detected by the probe array (pg. 7).

With regards to claim 26, Ciesla discloses a source of e/m radiation for irradiating the probe array (Fig. 1).

With regards to claim 27, Ciesla discloses the source provides a beam of radiation and the system further comprises a series of beam-splitters and fibre couplers, each beam-splitter being arranged to couple a proportion of the beam of radiation via a fibre coupler into an optical fibre such that in use the optical fibre irradiates the probe array (Fig. 1).

With regards to claim 28, Ciesla fails to teach the recited lens array. Nevertheless, optical elements such as a lens array used to direct a portion of light is well known and is viewed as a matter of routine design choice. It would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Ciesla with the recited lens array in order to couple said radiation to said optical fiber and prevent signal loss.

With regards to claim 29, Ciesla discloses said array may be configured as a hand held unit and further teaches a source, said signal processor and said optical fibre.. With regards to the specific configuration, it would have been obvious to one having ordinary skill in the art at the time the invention was made to reconfigure the arrangement taught by Ciesla, since it has been held that rearranging parts of an invention involves only routine skill in the art. *In re* Japikse, 86 USPQ 70.

With regards to claim 34, Cielsa discloses the claimed radiation probe wherein in use, the emitter and said detectors functioning together form a 1:1 proportion and operate at different

times, particularly at a times when the probe is positioned in different areas relative to the area of interest to detect certain diseases (pg. 33).

With regards to claims 35 and 37, Ciesla discloses a radiation probe for imaging an object comprising: a probe array, said probe array comprising: at least one emitter for emitting radiation, a plurality of detectors (pg. 32) for detecting radiation, and means for directing radiation emitted by the at least one emitter to the object and for directing radiation reflected (Abstract) from the object to the plurality of detectors, wherein said probe array is configured to perform a line scan of an object (in an x-direction across multiple regions, pg. 35), said line scan moving relative to said object such that emitted radiation is scanned across the object and reflected back to said plurality of detectors.

Although Ciesla fails to teach a specific scanning mechanism, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Ciesla with said mechanism in view of providing means to perform said line scan.

Ciesla fails to teach said emitter and detectors are photoconductive devices. Arnone teaches a THz imaging device comprising photoconductive emitter and detectors. It would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Ciesla with Arnone in order to provide deeper penetration depths.

Ciesla also fails to specify that the reflected radiation is reflected to at least two of the plurality of detectors. Cielsa does teach, however, that the number of detectors depend upon the application and spatial resolution required (pg. 32). As such, it would have been obvious to one with ordinary skill in the art at the time the invention was made to modify Ciesla such that the

reflected radiation is reflected to at least two of the plurality of detectors in order to image said object with the proper spatial resolution depending upon the application.

Furthermore, Ciesla also fails to teach rotating or moving said object. Note, however, that moving a probe array relative to an object of interest and moving an abject of interest relative to a probe array are obvious variants. Arnone teaches a THz imaging apparatus wherein either the sample can be rastered with respect to a beam of incident radiation or the beam can be moved with respect to the sample. Substituting the technique taught by Ciesla with the technique taught by Arnone would have been obvious since the substitution of one known element for another would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

With regards to claims 36 and 38-63, the imaging system claimed in claims 36 and 38-63 is taught by the combination of Cielsa and Arnone according to claims 2, 4-17, 19-29, and 34 and is rejected accordingly.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marcus H. Taningco whose telephone number is (571) 272-1848. The examiner can normally be reached on M - F 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marcus H Taningco/
Primary Examiner, Art Unit 2884